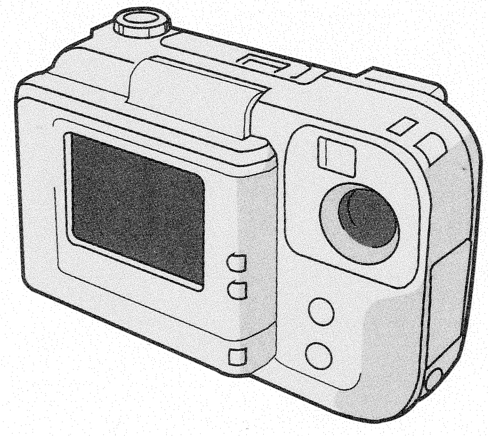
JVC

LCD CAMCORDER

GR-SV3EG/EK



Compact VHS

VHS C
PAL

SPECIFICATIONS *(The specifications shown pertain specifically to the model GR-SV3EG)*

GENERAL

Format : VHS PAL standard
Power source : DC 6 V ⎓
Power consumption : 5.3 W (LCD monitor off)
8 W (LCD monitor on)
Signal system : PAL-type
Video recording system : Luminance: FM recording
Colour: Converted sub-carrier direct recording
Conforms to VHS standard
Cassette : VHS C cassette
Tape speed (SP) : 23.39 mm/sec
(LP) : 11.70 mm/sec
Recording time
Max. (SP) : 45 minutes (with EC-45 cassette)
(LP : 90 minutes (with EC-45 cassette)
Operating temperature : 0°C to +40°C
Operating humidity : 35% to 80%
Storage temperature : –20°C to +50°C
Weight : Approx. 830 g
Dimensions : 172 (W) x 120 (H) x 82 (D)mm

CAMERA

Pick up : 1/4"-format CCD
Minimum required illumination : 12 lx
(F2.8)
Illumination range : 12 to 100,000 lx
Lens : F2.8, f = 4 to 12 mm, 3:1 power zoom lens
Focus : Pan-focus (W:40 cm to infinity, T:1.3 m to infinity)
Viewfinder : Optical zoom viewfinder

LCD MONITOR

Size : 3" diagonally measured
System : LCD/TFT active matrix

VIDEO (via VIDEO connector)

Output : 1 Vp-p, 75 ohms, unbalanced
Input : 0.5 to 2.0 Vp-p, 75 ohms, unbalanced

AUDIO

Output : –8 dBs, Low impedance (via AUDIO connector)
Input : –8 dBs high impedance (via AUDIO connector)
Speaker : 20 mm round x 1, monaural
Headphone : 3.5 ∅, monaural

AC POWER ADAPTER/BATTERY CHARGER (AA-V11EG, V11EK) SPECIFICATIONS

Power requirement : AC 110 – 240 V∿, 50/60 Hz
Power consumption : 23 W
Output : DC 8.5 V ⎓, 1.3 A (CHARGE)
DC 6.3 V ⎓, 1.8 A (VTR)
Charging system : Constant current, peak detection, timer controlled
Dimensions : 150(W) x 42(H) x 68(D) mm
Weight : Approx. 350 g (V11EG), Approx. 400 g (V11EK)

CASSETTE ADAPTER (C-P6U) SPECIFICATIONS

Dimensions : 188 (W) x 25 (H) x 104 (D) mm
Weight : Approx. 240 g
Accessory : "R6 (AA)"-size battery x 1

Specifications shown are for SP mode unless otherwise specified.
E. & O. E. Design and specifications subject to change without notice.

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No. 86244
October 1994

Safety Precautions

1. The design of this product contains special hardware and many circuits and components specially for safety purposes. For continued protection, no changes should be made to the original design unless authorized in writing by the manufacturer. Replacement parts must be identical to those used in the original circuits. Service should be performed by qualified personnel only.
2. Alterations of the design or circuitry of the product should not be made. Any design alterations of the product should not be made. Any design alterations or additions will void the manufacturer's warranty and will further relieve the manufacturer of responsibility for personal injury or property damage resulting therefrom.
3. Many electrical and mechanical parts in the product have special safety-related characteristics. These characteristics are often not evident from visual inspection nor can the protection afforded by them necessarily be obtained by using replacement components rated for higher voltage, wattage, etc. Replacement parts which have these special safety characteristics are identified in the Parts List of Service Manual. Electrical components having such features are identified by shading on the schematics and by (⚠) on the Parts List in the Service Manual. The use of a substitute replacement which does not have the same safety characteristics as the recommended replacement part shown in the Parts List of Service Manual may create shock, fire, or other hazards.
4. The leads in the products are routed and dressed with ties, clamps, tubings, barriers and the like to be separated from live parts, high temperature parts, moving parts and/or sharp edges for the prevention of electric shock and fire hazard. When service is required, the original lead routing and dress should be observed, and it should be confirmed that they have been returned to normal, after re-assembling.

Warning

1. This equipment has been designed and manufactured to meet international safety standards.
2. It is the legal responsibility of the repairer to ensure that these safety standards are maintained.
3. Repairs must be made in accordance with the relevant safety standards.
4. It is essential that safety critical components are replaced by approved parts.
5. If mains voltage selector is provided, check setting for local voltage.

INSTRUCTIONS

Thank you for purchasing the JVC Compact VHS camcorder. Learn about all the available features and take advantage of them for your total moviemaking enjoyment. Before using this camcorder, read this instruction booklet carefully so that you will obtain the best results from your camcorder.

SAFETY PRECAUTIONS

WARNING:

TO PREVENT FIRE OR SHOCK HAZARD, DO NOT EXPOSE THIS UNIT TO RAIN OR MOISTURE.

CAUTIONS:

- To prevent shock, do not open the cabinet. No user serviceable parts inside. Refer servicing to qualified personnel.
- When you are not using the AC Power Adapter/Battery charger for a long period of time, it is recommended that you disconnect the power cord from AC outlet.

Warning on lithium battery

The battery used in this device may present a fire or chemical burn hazard if mistreated. Do not recharge, disassemble, heat above 100°C or incinerate.

Replace battery with CR2025; use of another battery may present a risk of fire or explosion.

- Dispose of used battery promptly.
- Keep away from children.
- Do not disassemble and do not dispose of in fire.

- *This camcorder is designed exclusively for the* VHS-C video cassette. Only cassettes marked VHS-C can be used with this unit.
- HQ VHS is compatible with existing VHS equipment.

Warning Notice

It may be unlawful to record or playback copyrighted material without the consent of the copyright owner.

NOTES:

- The rating plate (serial number plate) and safety caution are on the bottom and/or the back of the main unit.
- The rating plate (serial number plate) of the AC Power Adapter/Battery Charger is on its bottom.

This unit is produced to comply with Directives 76/889/EEC, 82/499/EEC, 87/308/EEC and Standard IEC Publ. 65.

You are recommended to carefully read the cautions on page 32 and 33 before use.

CE mark on the rating plate declares that the product complies with Directives 89/336/EEC and 93/68/EEC.

Nickel-Cadmium (Ni-Cd) battery pack

Must be recycled or disposed of properly.

This camcorder is designed to be used with PAL-type color television signals. It cannot be used for playback with a television of a different standard. However, live recording and LCD monitor playback are possible anywhere. Use the BN-V12U/V22U/V50U/V60U battery packs and, to recharge them, the provided multi-voltage AC Power Adapter/Charger. (An appropriate conversion adapter may be necessary to accommodate different designs of AC outlets in different countries.)

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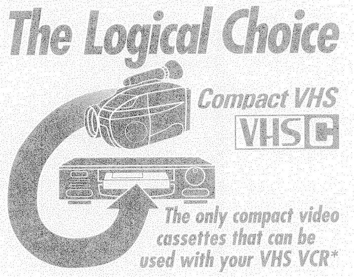
MAJOR FEATURES

IMPORTANT NOTICE


The Logical Choice
Compact VHS
VHS C
The only compact video cassettes that can be used with your VHS VCR*

JVC COMPACT VHS ADVANTAGES

☞ Convenience
Easy playback on your VHS deck* — no hook-ups necessary.

☞ Conserve
You don't have to use the camcorder for playback — this reduces the wear of the camcorder.

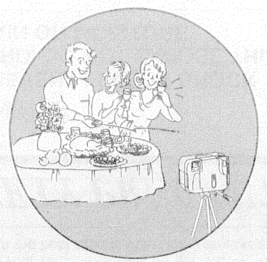
☞ Comfort
Can use the convenient features of your VCR with the remote control from your easy chair.

☞ Communication
Can send your tapes to others who also own a VHS VCR.

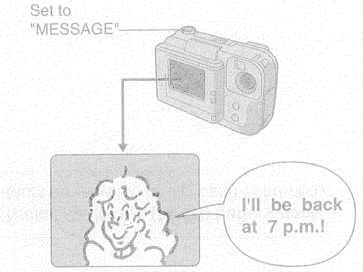
☞ Choice
Can also view the playback picture through the LCD monitor or connect directly to a TV.

*Using Cassette Adapter

Self Timer (☞ P. 20)



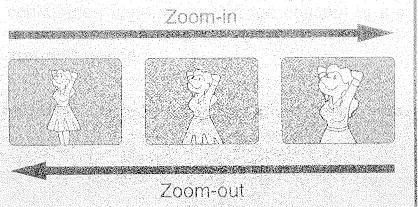
Message Mode (☞ P. 24)

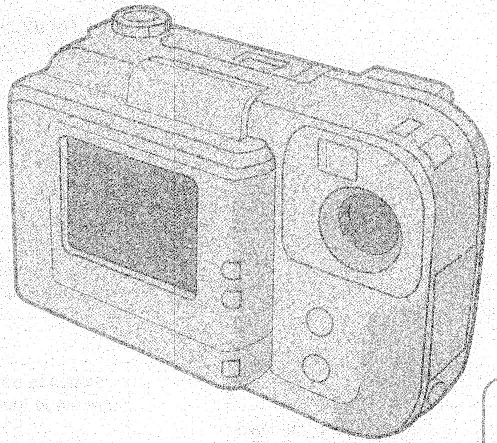

Set to "MESSAGE"
I'll be back at 7 p.m.!

QuickRec (5-Sec. Rec. mode) (☞ P. 19)

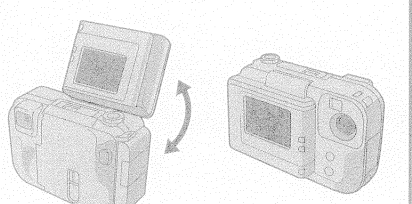
Seek Function (☞ P. 21)

3X Power Zoom (☞ P. 19)


Zoom-in
Zoom-out

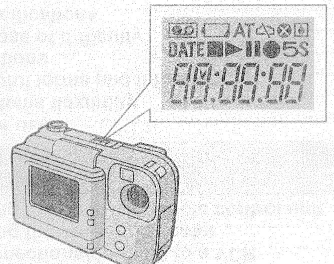


Multi-Purpose 3"Color LCD Swing Monitor



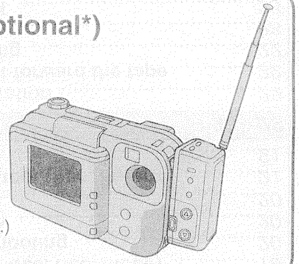
Interface Shooting

LCD Status Panel (☞ P. 10)


AT
DATE
5S
88:88:88

TV tuner TU-V20E (optional*)

VHF channels: 2 to 13
UHF channels: 21 to 69

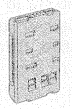


(For operation, refer to the instruction manual for the TU-V20E.)

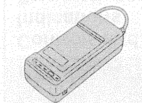
*Not available in some areas.

Instant ReShoot (☞ P. 21)

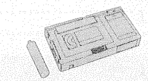
PROVIDED ACCESSORIES



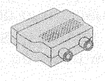
Battery pack
BN-V12U
(☞ P. 11, 12)



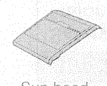
AC power adapter/charger
AA-V11EG
(☞ P. 11, 12)



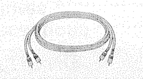
Cassette adapter
C-P6U (☞ P. 27)



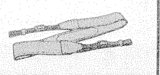
Cable adapter
(☞ P. 26)



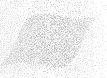
Sun hood
(☞ P. 16)



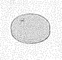
AUDIO/VIDEO cable (☞ P. 26)



Shoulder strap
(☞ P. 17)



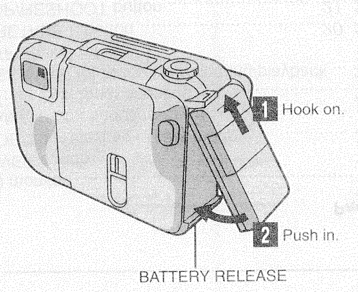
Cleaning cloth
(☞ P. 29)



Lithium battery CR2025
(☞ P. 14)

QUICK OPERATION GUIDE

SUPPLY POWER


1 Hook on.
2 Push in.
BATTERY RELEASE

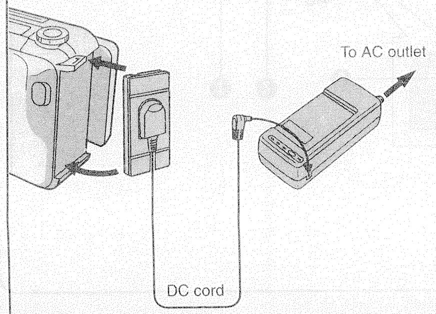
A. Using the battery pack

1 Hook-on the battery pack's top end to the camcorder. (Charging procedure, ☞ P. 12)
2 Push in the battery pack in until it locks into place.

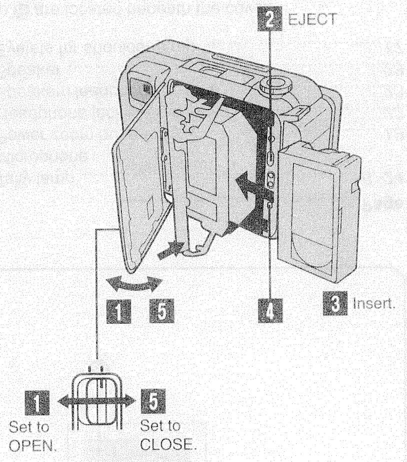
To remove the battery pack
Slide BATTERY RELEASE and pull out the battery pack.

B. Using the AC power adapter/charger (☞ P. 11)

To attach the DC cord to a camcorder:
Same as the battery pack (above).

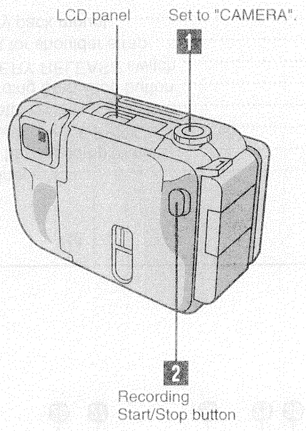

To AC outlet
DC cord

INSERTING A VIDEO CASSETTE


2 EJECT
1 5
4
3 Insert.
1 Set to OPEN.
5 Set to CLOSE.

1 Slide the cassette cover latch to "OPEN".
2 Press EJECT.
3 Insert a video cassette.
4 Set SP/LP as required.
5 Close the cassette cover and slide the cassette cover latch to "CLOSE".
(For more details, ☞ P. 15)

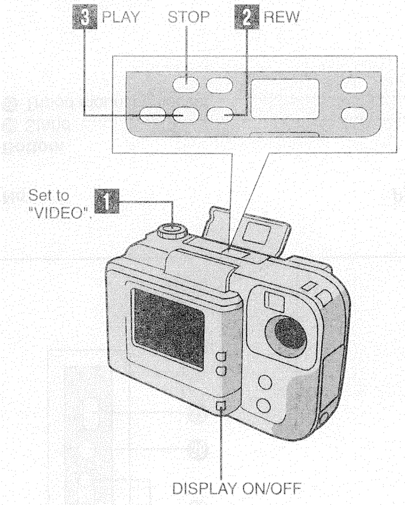
SHOOTING


LCD panel
Set to "CAMERA".
1
2
Recording Start/Stop button

1 Set the power switch to "CAMERA".
— The indicators appear on the LCD panel.
2 Press the Recording Start/Stop button.
— Recording starts.

- To stop recording temporarily, momentarily press the Recording Start/Stop button once again.
(For more details, ☞ P. 18)

PLAYBACK

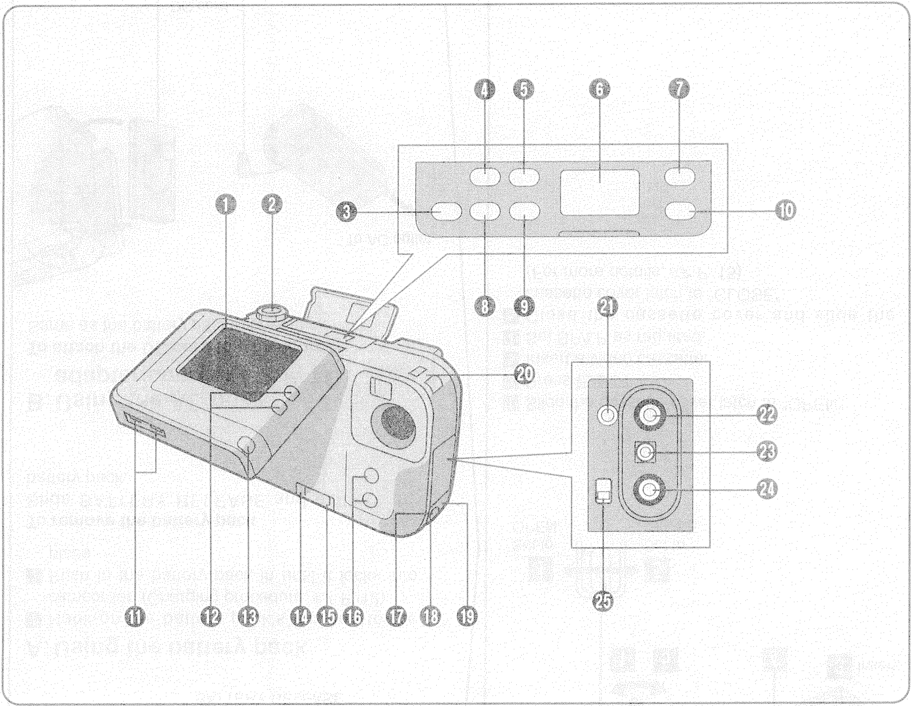

3 PLAY
STOP
2 REW
Set to "VIDEO". 1
DISPLAY ON/OFF

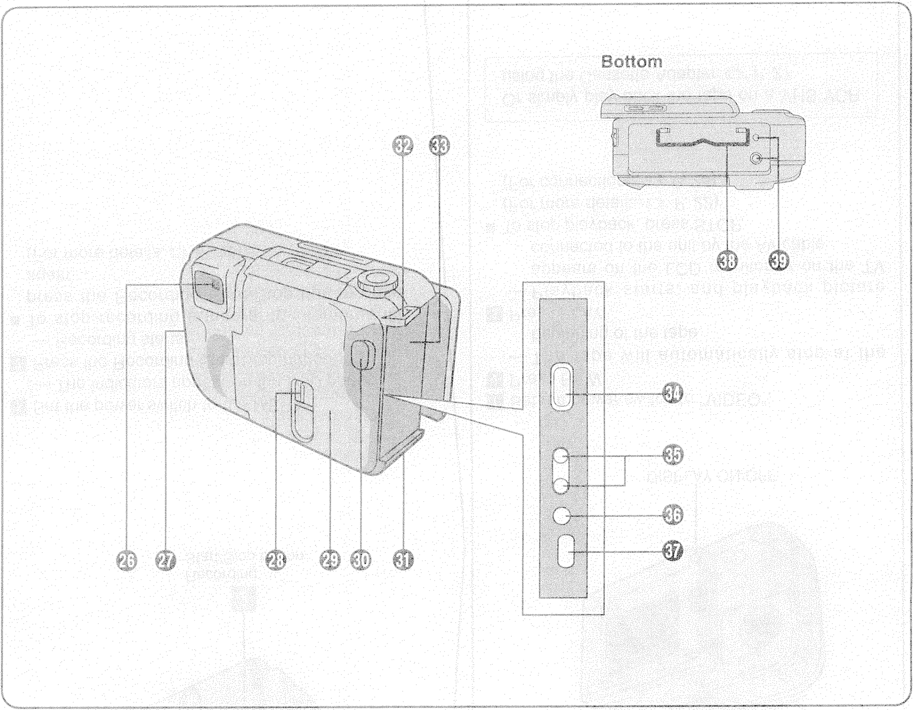
1 Set the power switch to "VIDEO".
2 Press REW.
— The tape will automatically stop at the beginning of the tape.
3 Press PLAY.
— Playback starts, and playback picture appears on the LCD monitor or on the TV connected to the unit by the AV cable.

- To stop playback, press STOP.
(For more details, ☞ P. 22)
(For connections, ☞ P. 26)

Or simply play back the tape on a VHS VCR using the Cassette Adapter. ☞ P. 27

CONTROLS AND CONNECTORS





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• CAMERA: for shooting	18
• ⏲ : for Self-Timer shooting	20
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④ STOP/RESHOOT button	21, 22
⑤ 5 SEC REC button	19
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⑦ C. RESET button	10
⑧ PLAY/PAUSE/SEEK button	21, 22
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⑬ DISPLAY (monitor) ON/OFF button	19

No.	Page
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㉑ to ㉕ are located beneath the cover.

No.	Page
㉑ Remote jack	28
㉒ VIDEO jack	26, 27
㉓ DC OUT jack	26
㉔ AUDIO jack	26, 27
㉕ IN/OUT SELECT switch	26

- OUT : When connecting to a TV or VCR to watch the playback picture or dub a tape.
- IN : To watch the picture from a connected VCR or TV tuner TU-V20E (optional) on the LCD monitor.

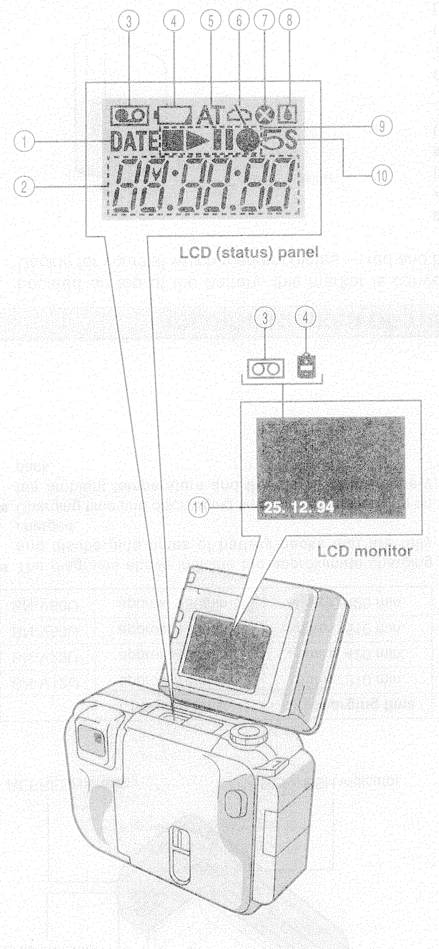
No.	Page
㉖ Viewfinder	18
㉗ Clock battery compartment	14
㉘ Cassette cover OPEN/CLOSE latch	15
㉙ Cassette cover	15
㉚ Recording Start/Stop button	18
㉛ BATTERY RELEASE switch	11
㉜ Eyelet for shoulder strap	17
㉝ Battery pack mount	11

The button ㉞ to ㊲ are located beneath the cassette cover.

No.	Page
㉞ EJECT switch	15
㉟ TRACKING/DATE ADJ. (adjust) buttons	14, 22
㊱ AUTO DATE/SET button	14
㊲ SP/LP recording mode select switch	16

No.	Page
Bottom	
㊳ Stand	17
㊴ Tripod mounting socket	17

INDICATIONS



① **Auto Date indication**
Displayed when the Auto Date function is activated. (☞ P. 14)

② **Elapsed time counter/Date & time indication/ Message indication**

- Normally displays the elapsed time counter. It is reset to "0:00:00" by pressing C.RESET or loading/unloading the cassette. (☞ P. 18)
- When adjusting date/time, either day/month/year or hour/minute is displayed. Pressing DISPLAY allows the user to review the adjusted items. (☞ P. 14)
- In Message mode, the number of messages is displayed. (☞ P. 24)

③ **▣, ▢ : Tape end warning**
Blinks when the tape is about to reach its end. When it reaches its end, its indicator disappears from the LCD monitor, and appears on the LCD Status Panel.

■ This indicator may not blink depending on the tape being used.

④ **▭, ▮ : Low-battery warning**
Blinks when battery power is running out. After this indication appears, the unit automatically turns itself off. Replace the battery pack with a fully charged one.

⑤ **AT : Tracking indication** (☞ P. 22)
Displayed while the Auto Tracking system is activated.

⑥ **⌂ : Clock battery warning**
Blinks for approx. 5 seconds, and then lights still after the unit is turned on if the lithium battery is not in place or exhausted. In this condition, no date/time function is available.

⑦ **⊗ : Head clog warning**
Blinks when the video head becomes clogged. Use the cleaning cassette (JVC TCC-2U, optional). If the indication still remains, consult your nearest JVC dealer.

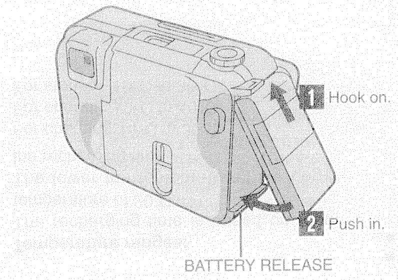
⑧ **▣ : Condensation warning**
Blinks when moisture condensation occurs on the head drum. While the indication is on the LCD panel, the unit's functions come to a halt. Turn off the unit, and leave it for a few hours. Then set the power switch to "CAMERA" or "VIDEO". A few minutes later, the warning should disappear.

⑨ **Operating modes**
● : Recording is being performed.
II● : Recording Standby mode
II : Playback pause
► : Playback
► II (blinking) : Seek (blank search) mode (☞ P. 21)
■ : Stop
■ (blinking) : Instant Reshoot (Rec. Return) mode (☞ P. 21)
II● (blinking) : Quick Review (☞ P. 20)

⑩ **QuickRec (5-sec. Record) indication** (☞ P. 19)

⑪ **Date display**
The date is automatically displayed and recorded for approx. 4 seconds after the date changes or a cassette is loaded.

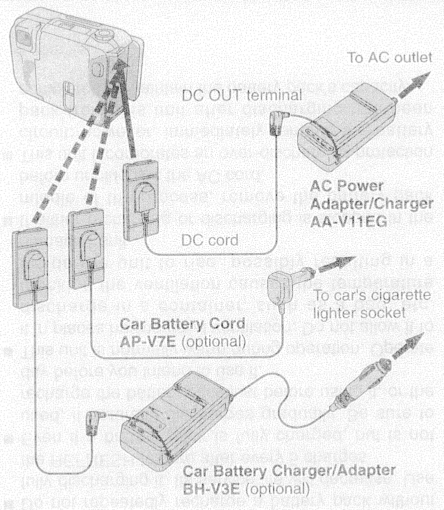
PREPARATIONS



Recording time

	LCD monitor OFF	LCD monitor ON
BN-V12U	approx. 70 min.	approx. 45 min
BN-V22U	approx. 140 min.	approx. 95 min
BN-V50U	approx. 170 min.	approx. 115 min
BN-V60U	approx. 140 min.	approx. 95 min-

■ The recording time per charge is influenced by the duration of the recording standby, frequency of zooming, etc. It is safer to have spare battery packs.


To AC outlet
DC OUT terminal
AC Power Adapter/Charger AA-V11EG
DC cord
To car's cigarette lighter socket
Car Battery Cord AP-V7E (optional)
Car Battery Charger/Adapter BH-V3E (optional)

POWER SUPPLY SYSTEM

The convenient 3-way power supply system gives you a choice of the most appropriate power supply unit, depending on the application.

■ No function is available without power supply.
■ Do not use any power supply other than specified.
■ Never attempt to use these power supply units with any equipment other than the camcorder.
■ The provided AC Power Adapter/Charger features automatic voltage selection in the AC range from 110 V to 240 V.

WITH BATTERY PACK

The battery pack has been kept in the uncharged state for shipment. Therefore, before use, be sure to charge it. (☞ See next page.)

Attaching the battery pack

1 Hook-on the battery pack's top end to the camcorder. (Charging procedure, ☞ P. 12)
2 Push in the battery pack in until it locks into place.

To remove the battery pack
Slide BATTERY RELEASE and pull out the battery pack.

WITH AC POWER

Use the AC Power Adapter/Charger.

Note:
This unit can be used with 110 V to 240 V power supplies. Selection is automatic and no adjustment is required.

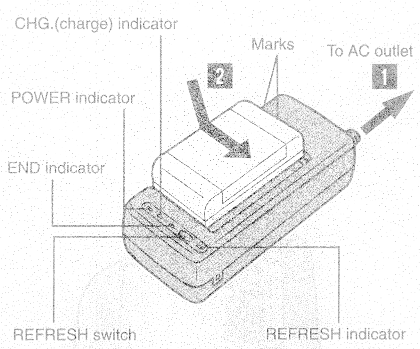
IN A CAR

Use the Car Battery Cord or Car Battery Charger.

■ Leave the car's engine idling when using the car battery.
■ The battery pack can also be recharged with the BH-V3E.
■ Refer to the instruction booklet of the BH-V3E (for use with 12 V or 24 V negative grounded cars only) and the AP-V7E (for use with 12 V negative grounded cars only).

Caution:
DO NOT watch the LCD monitor while driving. That may undermine your attentiveness to driving, and lead to a traffic accident.

(Continued on next page.)



	Charging time	Discharging time
BN-V12U	approx. 70min.	approx. 210 min.
BN-V22U	approx. 130min.	approx. 420 min.
BN-V50U	approx. 170min.	approx. 510 min.
BN-V60U	approx. 130min.	approx. 420 min.

- The diagrams above indicate the approximate charging and discharging times of battery packs that are fully charged.
- Charging time and discharging time will vary depending on the ambient temperature and the status of the battery pack.

POWER SUPPLY SYSTEM (cont'd)

CHARGING/DISCHARGING THE BATTERY PACK

Charging the battery pack

1. Connect the AC power cord to a wall outlet.
   — The power indicator lights.
2. Align marks and slide the battery pack in the direction of the arrow until it locks in place.
   — The CHG. indicator lights.
   — When charging has been completed, the END indicator will light.
3. Slide the battery pack in the opposite direction of the arrow.

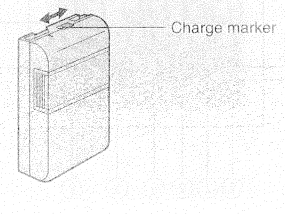
Using the REFRESH feature

The REFRESH feature on the AC power adapter allows you to completely discharge the power from the battery pack before charging. After charging the battery pack several times, the actual battery operating time will gradually decrease. For this reason it is recommended to use the REFRESH feature only after every 5 charges.

1. Attach the battery pack to the adapter as illustrated above.
2. Push REFRESH.
   — The REFRESH indicator will light and discharging will begin.
   — After discharging is completed, the indicator will go off.

CHARGE MARKER OF THE PROVIDED BATTERY PACK

Located on top of the battery, this marker is convenient for reminding you of the battery's charge status. Decide for yourself which marker colours — red and black — will represent charged and discharged.



- **"Battery charged" — RED**
  After charging (as soon as charging is completed), set this marker so that red appears.
- **"Battery discharged" — BLACK**
  Upon detaching the discharged battery from the camcorder, set this marker so that black appears.

CAUTION

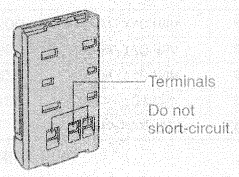
This marker does not move automatically. Make sure that the marker is properly set to accurately indicate the battery's charge status.

Notes:

- Do not repeatedly recharge a battery pack without fully discharging it. Its service life will decrease. Use the REFRESH feature after every 5 charges.
- Even if a battery pack is fully charged, but is not used, it naturally discharges gradually. Be sure to recharge the battery pack just before using it, or the day before you intend to use it.
- This unit is normally warm during operation. Operate it in places having good ventilation. Do not allow it to discharge in a container, such as a bag, etc. Blocking the ventilation causes the temperature inside the unit to rise, possibly resulting in a damaged unit.
- If either recharging or discharging is stopped in the middle of the process, remove the battery pack before unplugging the AC cord.
- This unit incorporates an over-discharging protection circuit; however, immediately remove the battery pack from this unit after discharging has been completed to maintain the battery pack's capacity.
- If used near a radio, the AC Power Adapter/Charger may interfere with reception.
- Be sure to unplug the DC cord before charging or discharging the battery pack.
- Before storing the battery pack for a long period it is recommended to discharge it.
- The REFRESH feature will not function if the power status of a battery pack is discharged (No power remaining).
- When the CHG.indicator is blinking, the battery pack has become hot. Wait for a while for the battery pack to cool.
- With a just-purchased battery pack, or with a battery pack that has been stored for a long period, the CHG. indicator may not light properly. In such a case, remove and reattach the battery pack again, then do the recharging procedure. The CHG. indicator should light during recharging to indicate, the battery pack is normal. If this is not the result, consult your nearest JVC dealer.

A WORD ON THE EXCLUSIVE BATTERY PACKS

The battery packs are nickel-cadmium batteries and nickel-metal hydride batteries. Be sure to carefully read the following caution. When using an optional battery pack, please also read attached caution.



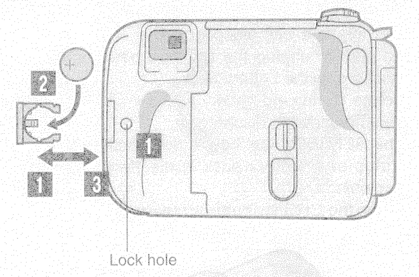
Temperature ranges:

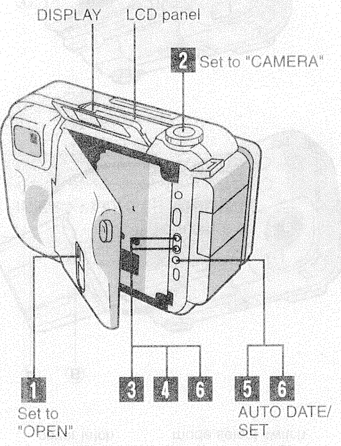
The recharging time is based on room temperature of 20°C.

The lower the temperature, the longer the recharging time.

For charging:10°C to 35°C
For operating:0°C to 40°C
For storing:–10°C to 30°C

- **To avoid hazard:**
  - Do not burn.
  - Do not short-circuit the terminals.
  - Do not modify or disassemble.
  - Use only specified chargers.
- **To prevent damage and prolong service life:**
  - Avoid dropping, unnecessary shocks.
  - Avoid repeated charging without discharging.
- **This unit has a limited service life:**
  Near the end of its service life, when it begins to deliver less recording time per charge, purchase a replacement.
- **It is normal for the unit to be warm after charging or use.**
- **This is a chemical reaction type battery; its properties are best maintained under the following conditions:**
  - Optimum charging takes place at temperatures between 10°C and 35°C. Cooler temperatures impede chemical reaction. Warmer temperatures can prevent complete charging.
  - Store in a cool dry place. Extended exposure to high temperatures will increase natural discharge and shorten service life.
  - Total natural discharge may occur during long storage periods. (Uncharged storage is preferable; recharge one day before use.)
  - Remove from charger or powered unit when not in use; some machines use current even when switched off.





CLOCK (LITHIUM) BATTERY INSERTION

Necessary for clock and date/time settings.

1. Insert a pointed object into the lock hole and pull out the clock battery holder.
2. Insert the provided lithium battery with the plus (+) side up into the holder.
3. Replace the battery holder until it clicks in place.

Warning on lithium battery

- Dispose of used battery promptly.
- Keep away from children.
- Do not disassemble and do not dispose of it in fire.

(See Warning on lithium battery, ☞ P. 2)

SETTING DATE/TIME

If the date/time is adjusted in advance. The date (day/month/year) will be displayed on the LCD monitor and will be recorded for approx. 4 seconds in the following situations:

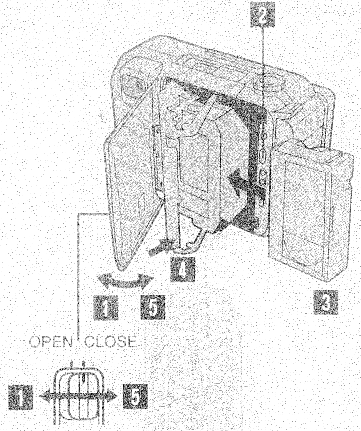
- If the date and time had been adjusted prior to recording.
- If the date changes from one day to the next day between recordings.
- If a cassette is loaded prior to recording.

Proceed as follows when adjusting the date and time for the first time and after replacing the clock battery.

1. Open the cassette cover.
2. Set the power switch to "CAMERA".
3. Press both DATE ADJ. (+/–) buttons simultaneously.
   — The year blinks on the LCD panel.
4. Press either DATE ADJ. button to choose the correct year.
5. Press SET.
   — The year is adjusted.
6. Repeat steps 4 and 5 to set the month, day, hour and minute.
   — As the minute is adjusted, the clock begins to keep time.

Notes:

- While the date or time is blinking, the clock does not keep time.
- The LCD panel normally displays the elapsed time counter. To confirm the adjusted date/time, press DISPLAY. The items are shown one after another in approx. 5 seconds before the LCD panel turns back to the elapsed time counter. (DISPLAY becomes ineffective when the Message mode is engaged. ☞ P. 24)
- When the Auto Date function is not required (i.e., to cancel automatic date recording), press AUTO DATE. Make sure that the date indicator on the LCD panel disappears.



LOADING AND UNLOADING A CASSETTE

Loading

1. Slide the cassette cover latch to "OPEN".
2. Press EJECT. — The cassette holder opens.
3. Insert the cassette with its label facing outward.
4. Close the cassette holder.
5. Close the cassette cover and slide the cassette cover latch to "CLOSE".

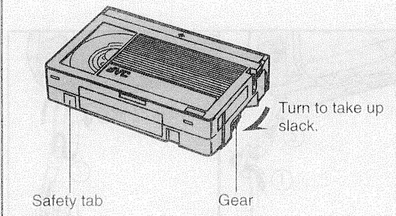
Unloading

1. Slide the cassette cover latch to "OPEN".
2. Press EJECT. — The cassette holder opens.
3. Remove the cassette.
4. Close the cassette holder.
5. Close the cassette cover and slide the cassette cover latch to "CLOSE".

Notes:

The EJECT switch is ineffective when the power switch is set to "MESSAGE".

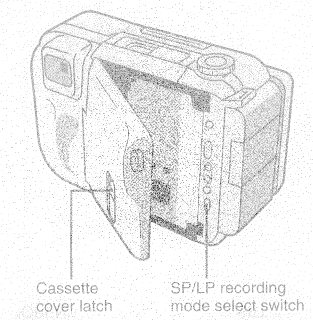
VIDEO CASSETTE



Storage of cassettes

- Avoid exposing the cassettes to direct sunlight. Keep them away from heaters.
- Avoid storing the cassettes in humid or dusty places.
- Do not drop the cassettes. Do not expose them to violent vibrations or shocks.
- Do not expose the cassettes to strong magnetic fields (near a motor, transformer or magnet).
- Place the cassettes in cassette cases and position them vertically.

- This camcorder employs only the cassettes carrying the VHS-C mark.
- Recording onto prerecorded tapes automatically erases the previously recorded video and audio signals.
- An inverted cassette cannot be inserted.
- Do not load and unload the cassette repeatedly without allowing the tape to run at all. This will slacken the tape and thereby damage it.
- Make certain before loading the cassette that the tape is not slack. If there is any slack, turn the gear on the cassette in the direction of the arrow to take up slack.
- The cassette is equipped with a safety tab to prevent accidental erasure. When the tab is removed, recording is impossible. If you wish to record on a cassette whose tab has been removed, use adhesive tape to reseal the slot.
- To avoid excessive exposure to dust and fingerprints, do not open the front tape cover.



SELECT THE RECORDING MODE

1 Slide the cassette cover latch to "OPEN".

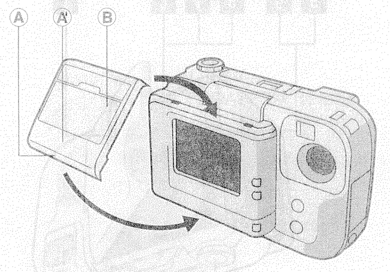
2 Set the recording mode select switch as required.

- **SP:** To maintain sound and picture quality. Better for dubbing later.
- **LP:** To record 2 times longer than when in the SP mode. For more economical use of tape.

3 Close the cassette cover and slide the cassette cover latch to "CLOSE".

Note:

If the recording mode is switched during actual recording on the same tape, the playback picture will be distorted at the point of switching.



USING THE SUN HOOD

Shields the LCD monitor from reflection so that the user can watch it with ease even under direct sunlight. It also helps protect the monitor from damage.

How to attach

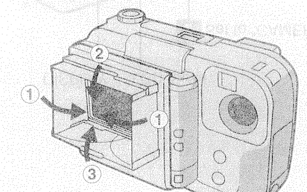
Insert the tab of the sun hood into the slot above the LCD monitor.

- To remove, pull up from Ⓐ. If difficult, try pulling down on Ⓐ while pressing Ⓐ'.

How to use

To watch the monitor, pull Ⓑ down; the other flaps automatically fold out.

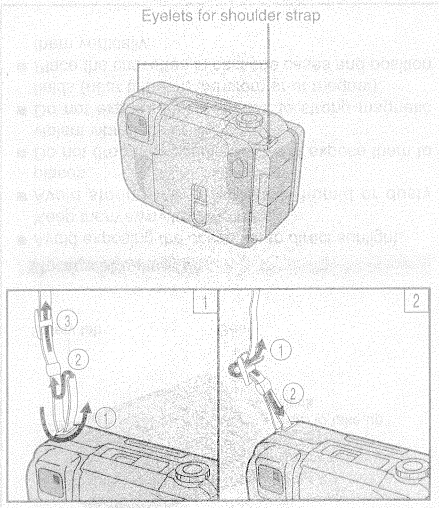
When not using the monitor, fold the flaps back inside the frame beginning with the side flaps ①, as shown in the diagram on the left.



ATTACHING THE SHOULDER STRAP

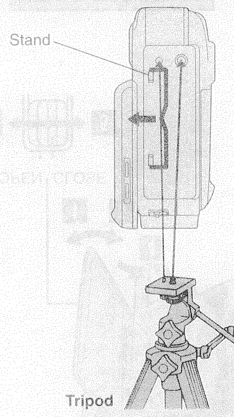
1 Loop the end of the strap over the top of the eyelet ①, then, folding it back, thread the end of the strap first through the keeper ②, then the buckle ③. Making sure that the strap is not twisted, repeat the above procedure to attach the other end of the strap to the other eyelet.

2 Adjust the shoulder strap to the desired length ①, then slide both keepers up snug against the eyelets to prevent the strap from slipping ②.



USING THE STAND

The stand can be used to place the unit on a table, a shelf, etc.



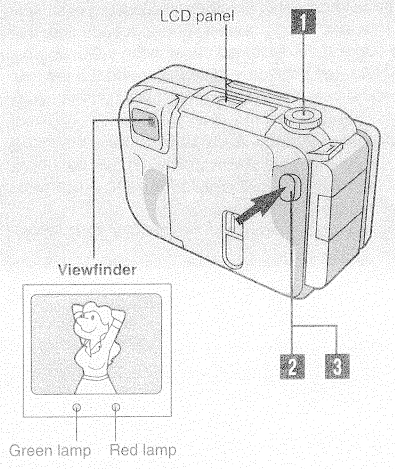
TRIPOD MOUNTING

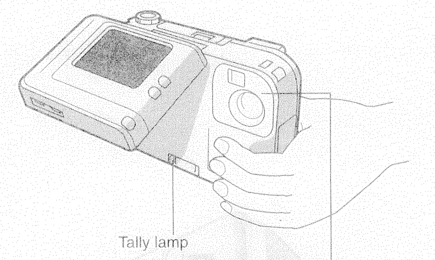
Align the screw and camera direction stud of the tripod with the camcorder's tripod mounting socket and stud hole, and firmly tighten the screw.

CAUTION:

When using a tripod, be sure to open and extend its legs fully to stabilize the camcorder. To prevent damage to the unit caused by falling over, do not use a small-sized tripod.

If the camcorder cannot be stabilized by any means, consult the nearest JVC Service Dealer for a tripod adapter.





Caution: Be careful not to cover this area with your fingers; built-in here is the lens and sensor necessary for shooting.

SHOOTING

Preparations

- Supply power.(☞ P. 11.)
- Insert a video cassette correctly. (☞ P. 15.)
- Set SP/LP as required. (☞ P. 16.)

1. To enter the Record-Standby mode

1 Set the power switch to "CAMERA".
— The green lamp lights in the viewfinder, and ●II appears on the LCD panel.

2. To shoot the scene

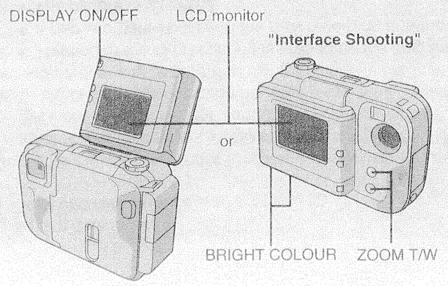
2 Press the Recording Start/Stop button to start recording.
— The tally lamp and red lamp in the viewfinder light while the recording is in progress ● lights on the LCD panel.

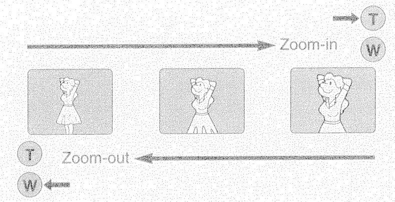
3 To stop recording temporarily.
Press the Recording Start/Stop button once again.

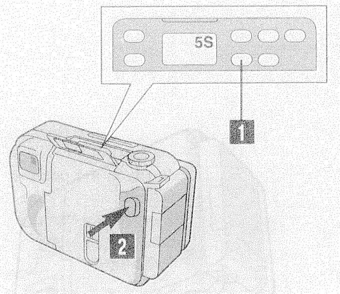
- To restart recording.
  Press the Recording Start/Stop button.
- Repeating steps 2 and 3 produces assemble recordings.

Notes and Advice

- The tape's elapsed time counter is displayed on the LCD panel. (☞ P. 10)
- If the Record-Standby mode continues for longer than about 5 minutes, the unit switches itself off automatically. To re-engage the Record-Standby mode, press the Recording Start/Stop button. This makes clean assembled recordings possible even after a long pause.
- For a longer pause, set the power switch to "OFF" to save power.
- The green lamp in the viewfinder blinks when one of the warning indicators below blinks on the LCD panel (☞ P. 10):
  - * ▭ .....Tape is about to reach its end.
  - * ▭ .....Battery power is running out.
  - * ▣ .....Moisture condensation is occurring.
  - * ⊗ .....Video head is clogged.
  - * △ .....Lithium battery is not in place or exhausted. (Blinks for approx. 5 seconds after the unit is turned on.)
- The recorded image may be slightly different from that captured through the viewfinder. This is because the lens and the viewfinder are separately positioned.
- Focusing is impossible within 0.4 m when fully zoomed-out (W), and within 1.3 m when fully zoomed-in (T).
- When recording with a cassette that has been removed from the unit in the middle of use, first re-locate the end of the last recording (i.e. the point that you want to start recording from) by using the Retake or Seek function (☞ P. 21) after re-inserting the cassette. Otherwise, the end of the last recording may be erased.







USING THE LCD MONITOR DURING SHOOTING

The LCD monitor, when lifted up, can be used to display the scene being recorded, freeing the user from having to squint through the small viewfinder. When on the same side as the lens, the monitor permits "Interface Shooting" — you can shoot yourself while viewing your own image on the monitor!

- Turning the power switch from OFF to CAMERA or from OFF to VIDEO automatically turns on the LCD monitor.
- Press DISPLAY ON/OFF to switch on/off the LCD monitor.

ZOOMING

Pressing the power zoom buttons ("T" & "W") will vary the focal length of the lens.

Procedure

- Pressing T [Telephoto]: Zoom in on the image (bring it nearer).
- Pressing W [Wide angle]: Zoom out.

QUICKREC (5-SEC. REC. MODE)

Records a scene for 5 seconds, providing quick scene transitions like those seen in TV programs.

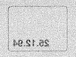
1 Press 5-SEC. REC in the Record-Standby mode.
— "5S" appears on the LCD panel.

2 Press Recording Start/Stop button.
— Recording starts, and the Record-Standby mode is automatically engaged 5 seconds later.

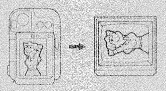
- To resume normal recording, press 5-SEC. REC again in the Record-Standby mode. "5S" on the LCD panel disappears.

Notes and Advice

- Interface Shooting inverts the image like a mirror and the indicators on the LCD monitor.

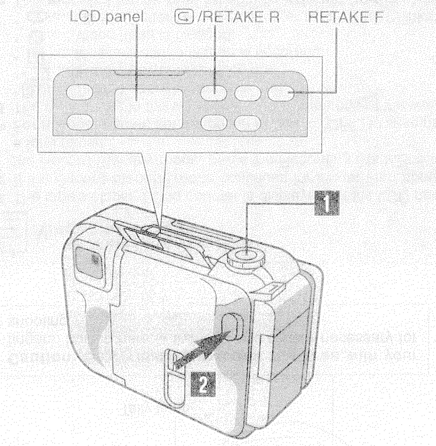


- If the camcorder is held vertically (on its side) while shooting, the recorded/played-back picture falls sideways.



- When not using the LCD monitor, turn it off by pressing DISPLAY ON/OFF. That saves the battery's power.
- To obtain the best viewing position of the LCD monitor, adjust its angle in the Record-Standby mode. (If adjusted while shooting, the LCD monitor's shadow may be recorded.)
- The LCD monitor's brightness and color can be adjusted with the BRIGHT and COLOUR dials. Normally set both to the middle.
- To continue shooting longer than 5 seconds with the QuickRec mode engaged, keep the Recording Start/Stop button pressed. As long as it remains pressed, recording is possible.

SHOOTING (Cont'd)



SELF-TIMER SHOOTING

This mode lets you delay the start of recording after the Recording Start/Stop button has been pressed. If the camcorder has been secured, the operator can enter the picture before actual recording begins.

1 Set the power switch to "⏲".
 — The camcorder enters the Record-Standby mode.

2 Press the Recording Start/Stop button.
 — Recording automatically starts 15 seconds later.

- Until recording starts, the tally lamp and the red lamp in the viewfinder blink. When recording starts, they remain lit.

QUICK REVIEW

If you want to review the end of the last recording for confirmation, use this function.

1 Press ↩ when you are in the Record-Standby mode.
 — The tape will be rewound for about 2 seconds of program time and played back automatically for this section, after which it will pause in the Record-Standby mode for the next shot.

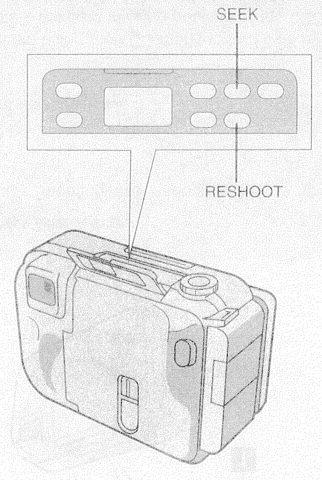
RETAKE

While recording, you may decide to re-record certain segments. The Retake function is convenient for this.

1 Make sure the camcorder is in the Record-Standby mode. (If not, engage the mode.)

2 Press either RETAKE to reach the point where you wish a new recording to start.
 - When RETAKE is released, the camera will enter the Record-Standby mode again.

3 Press the Recording Start/Stop button.
 — Recording starts.



INSTANT RESHOOT (REC.RETURN)

Useful to re-record a segment that you don't like.

1 Engage the Record-Standby mode.

2 Press RESHOOT.
 — The tape automatically rewinds back to the beginning of the last recording (one shot's worth). After that, the unit re-enters the Record-Standby mode.

SEEK

Searches for a blank segment on the tape.

1 Press SEEK in the Record-Standby mode.
 — The camcorder automatically fast-forwards/rewinds to the end of the recorded portion of the tape. When the tape stops, the unit re-enters the Record-Standby mode.

Notes and Advice

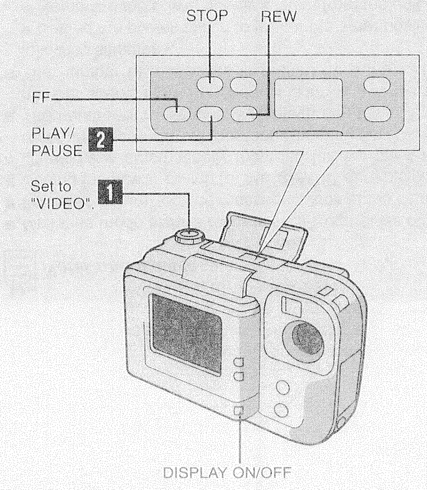
- To cancel the Self-Timer mode:
  - When the tally lamp is blinking:
    Press the Recording Start/Stop button to turn off the tally lamp. Then set the power switch to a position other than "⏲".
  - When the tally lamp is off or the QuickRec mode (☞ P. 19) is engaged:
    Just set the power switch to a position other than "⏲".
- Distortion might occur when playback starts in the Quick Review mode. This is normal.
- Noise may appear during Retake. This is normal.
- The Retake function will continue to record over all video and audio from the point you start from.

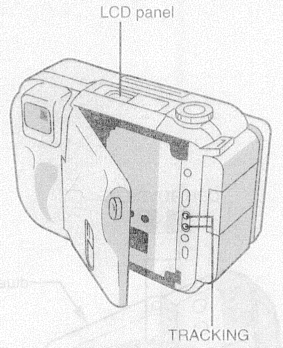
Notes and Advice

- Use the Instant ReShoot function as soon as the unit enters the Record-Standby mode after recording. After another operation (i.e., Retake, power off, ejecting/loading) is done in the Record-Standby mode, the Instant ReShoot function will not work.
- To cancel the Seek function halfway, press SEEK again.
- After a scene is re-recorded using the Instant ReShoot and Seek function, the following symptoms may occur:
  - The end of the old recording is erased by the beginning of the new one.
  - A gap is created between the new recording and the old one.
  - The picture is distorted.

  These are not due to any defect of the unit.
- If the SEEK function is used with a cassette not having a blank segment, the tape runs until its end.
- The Instant ReShoot function will continue to record over all previous video and audio from the beginning of the previous scene recorded.
- The Seek function looks for blank tape and will not work when recording over previously recorded tape.

PLAYBACK





The camcorder permits playback of recorded "VHS-C" video cassettes.
For connections refer to page 26.

PLAYBACK OPERATION

Preparations

- Supply power. (Battery or AC operation: ☞ P. 11)
- Insert a pre-recorded VHS-C cassette.
  - Ensure that tape is not slack inside the cassette, then load the cassette correctly. ☞ P. 15.

1. To playback a cassette

1 Set the power switch to "VIDEO".

2 Press PLAY/PAUSE.

— Playback starts and playback picture appears on the LCD monitor screen and connected TV.

2. To stop playback

- Press STOP.

REWIND OR FAST-FORWARD THE TAPE

To rewind the tape:
When in the stop mode, press REW.

To fast-forward the tape:
When in the stop mode, press FF.

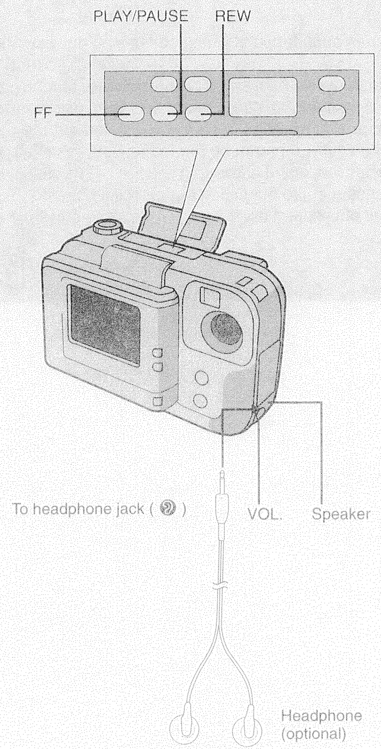
MANUAL TRACKING

Optimal tracking is usually maintained by the Auto Tracking system. If noise bars appear on the screen, the tracking needs to be adjusted manually.

1. Press both TRACKING (+/–) simultaneously during playback.
   — "AT" on the LCD panel disappears.
2. Press either TRACKING + or – to adjust to the best picture possible.
   - To resume Auto Tracking, press both TRACKING (+/–) simultaneously.
     — "AT" appears on the LCD panel.

Notes and Advice

- After about 5 minutes in Stop mode, the camcorder switches itself off automatically.
  (To turn on the camcorder again, set the power switch to "OFF" first and then back to "VIDEO".)
- The tracking adjustment may not be effective on tapes recorded on another VCR's or camcorders.
- If the playback picture does not appear on the LCD monitor, press DISPLAY ON/OFF.



STILL PLAYBACK

Press PLAY/PAUSE during playback.

- To resume normal playback, press PLAY/PAUSE again.

SHUTTLE SEARCH

Fast-speed forward playback:
Press FF during playback.
— Playback speed of the tape will be 3 times the normal speed in the SP mode, and 7 times in the LP mode.

Fast-speed reverse playback:
Press REW in the Play mode.
— Reverse playback speed of the tape will be 3 times the normal speed in the SP mode, and 7 times in the LP mode.

SPEAKER AND HEADPHONE

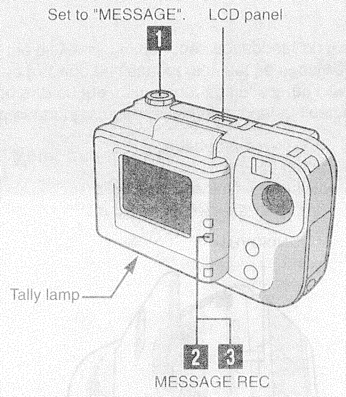
The built-in speaker or a pair of headphones (optional) can be used to listen to the playback sound.

- The sound is monaural.
- Turn VOL. to adjust the volume.
- Connect the headphone after removing the cap of the headphone jack.

Notes and Advice

- For brief fast-speed searching, hold FF or REW for more than 2 seconds. When the button is released, the search ends and the tape will play.
- Noise bars will appear and pictures may become monochrome while in Still Playback or Shuttle Search. This is not due to any defect of the unit.
- To protect the tape and to conserve power, the camcorder will enter the stop mode and turn itself off after 5 minutes of still playback.
- Adjust the playback sound volume to the appropriate level.
- The playback sound cannot be heard from the speaker when using headphones.
- When the built-in speaker's volume is too loud, the played-back picture may be unstable. In this case, lower the volume.

MESSAGE MODE



Useful for communication. Can be used as a "video bulletin board" for family members, or to make "video letters" for friends, etc.

Preparations

- Supply power by using the AC power adapter. (☞ P. 11)
- Insert a video cassette correctly. (☞ P. 15)

To record messages

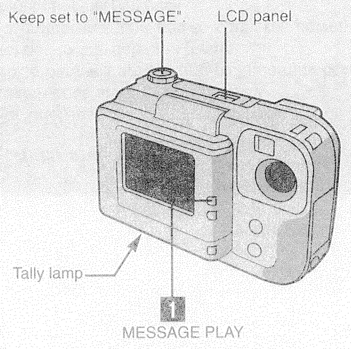
1. Set the power switch to "MESSAGE".
2. Press MESSAGE REC.
   — The tally lamp blinks in red, and then lights as recording starts. Make sure to record a message after the lamp becomes still.
3. When finished recording a message, press MESSAGE REC again.
   — Recording stops, and the LCD monitor automatically turns itself off. The tally lamp starts to blink in green.
4. Repeat steps 2 and 3.
   - Up to 30 messages can be recorded if the tape does not reach its end prior to that.
   - Leave the power switch set to "MESSAGE".

CAUTION:
If message playback is consecutively repeated or a large number of messages is recorded, the beginning/end of a message may not be properly played back. To prevent this, take a few seconds' leeway between one message and another.

Notes and Advice

- Message mode always records in SP regardless of the SP/LP recording mode select switch position.
- For more natural looking messages, look at the camcorder lens while you are recording your message.
- Setting the power switch to "MESSAGE" automatically zooms out the image.
- Date/time is automatically recorded for approx. 4 seconds at the beginning of every message. Since message recording is one kind of Interface Shooting (☞ P. 19), the indicators on the LCD monitor are inverted.
- The number of messages is displayed on the LCD panel. (☞ P. 10) As a message is recorded/played back, the number counts up. When the unit is turned off, the number shows how many messages have been recorded.
- The number of messages is erased from the LCD panel and message playback becomes impossible in the following situations:
  - Setting the power switch to one of the other positions than "MESSAGE", and then back to "MESSAGE"
  - Removing the power supply system from the unit.
  - The unit is unable to judge the number of messages.
  - After Message recording/playback is consecutively repeated, the beginning/end of a message may not be properly played back.

  In these cases, play back the tape normally. (☞ P. 22)



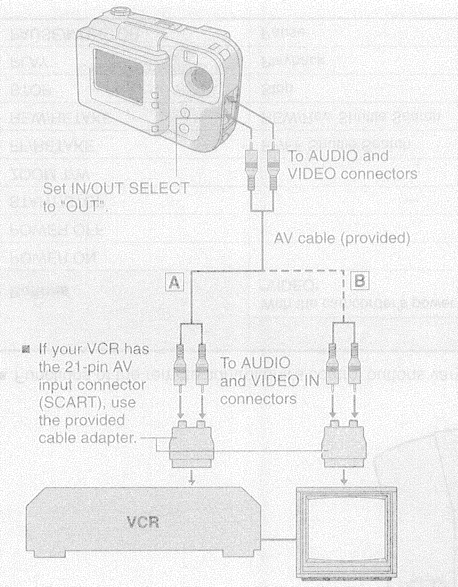
To playback messages

1. Press MESSAGE PLAY.
   — The LCD monitor switches itself on, and rewinds the tape back to the beginning of the first message. Then the message is played back.
   — The tally lamp remains lit in green.
2. As all the recorded messages are played back, the tape stops and the LCD monitor automatically turns itself off.

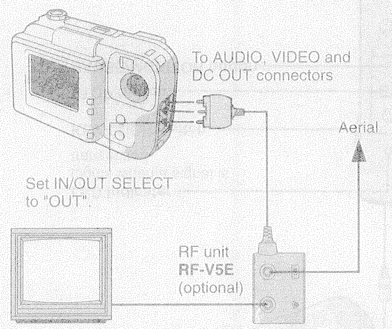
Notes and Advice

- Pressing MESSAGE PLAY while a message is being played back rewinds the tape to its beginning.
  (If pressed twice: to the beginning of the message before the previous message, and so on.)
- The EJECT switch is ineffective in the Message mode.
- The LCD monitor cannot be turned off while a message is being recorded/played back.
- With the power switch set to MESSAGE and the LCD monitor switched off, the LCD monitor remains off even if the power switch is turned to ⏲ or CAMERA.
- The unit remains turned on as long as the Massage mode is engaged. When not using the mode for a long time, turn off the unit.
- Either the built-in speaker or a headphone can be used to listen to playback sound.

CONNECTIONS/DUBBING TO A VCR


To AUDIO and VIDEO connectors
Set IN/OUT SELECT to "OUT".
AV cable (provided)
A
B
To AUDIO and VIDEO IN connectors
VCR

- If your VCR has the 21-pin AV input connector (SCART), use the provided cable adapter.


To AUDIO, VIDEO and DC OUT connectors
Aerial
Set IN/OUT SELECT to "OUT".
RF unit
RF-V5E
(optional)

Also refer to the instruction manual for your VCR or TV when connecting the camcorder to them.

Preparation

Set IN/OUT SELECT to "OUT".

Connection/Tape Dubbing to a VCR A

In this situation, use the AV cable.

1. Connect the camcorder and the VCR as shown in the diagram on the left.
2. Turn on the camcorder, the VCR and TV.
3. Set the VCR to AUX(iliary) input mode, and the TV to the VIDEO mode.

Tape dubbing to a VCR

4. Correctly insert the appropriate cassettes into the camcorder and the VCR.
5. Engage the camcorder's play mode (☞ P. 22) and the VCR's recording mode to start dubbing.
   — To stop dubbing temporarily, engage the VCR's Record Pause mode and the camcorder's still mode.

- Stop both the camcorder and the VCR when dubbing is finished.

Connection to a television equipped with A/V input connector B

In this situation, use the AV cable.

- Connect the AUDIO and VIDEO connectors of the camcorder to the A/V input connector of the television.
- Use the Video (or AV) mode specified in the TV's instruction manual.

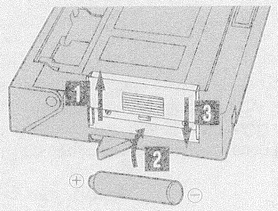
Connection to a television not equipped with A/V Input connector

In this situation, use the RF unit RF-V5E (optional). For connection and operation, please refer to the instruction manual for the RF-V5E.

Notes and Advice

- It is recommended to use the AC Power Adapter/Charger as the power supply rather than the battery pack.
- It is possible to monitor the picture and sound from the camcorder even when a cassette tape is not loaded. Set the power switch to "CAMERA". When you select the television input from your camcorder, the audio and video can be monitored.
- The camcorder can be used to view the picture and hear the sound from a connected TV or VCR.
  - Set IN/OUT SELECT to "IN".
  - Connect the audio and video output connectors to the camcorder's AUDIO and VIDEO connectors using the AV cable.
  - *Set the power switch to "VIDEO".*

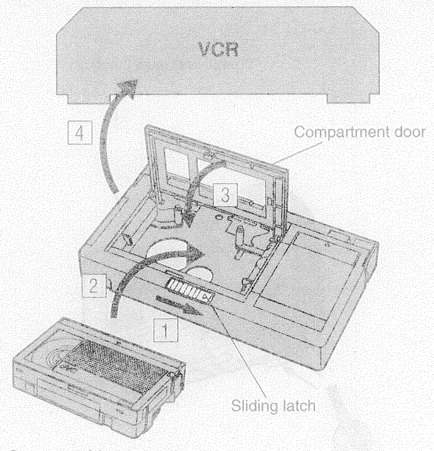
USING THE CASSETTE ADAPTER



By using the provided cassette adapter (C-P6U), a VHS video cassette recorded with this camcorder can be played back with any VHS video recorder. When the VHS-C video cassette is installed in the cassette adapter, it is fully compatible for both recording and playback on any VHS video recorder. The C-P6U cassette adapter is battery-powered and will automatically perform tape loading and unloading.

Inserting the battery into the cassette adapter

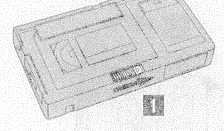
1. Remove the battery cover by sliding it up.
2. Install one "R6 (AA)" size battery as shown.
3. Reattach the cover.

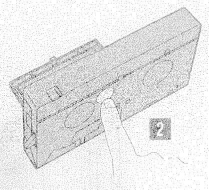


Compact video cassette

Playback on the VCR

1. Open the compartment door by sliding the latch.
2. Insert the compact video cassette.
3. Close the compartment door. The tape is loaded.
4. Insert the cassette adapter into the VCR.
5. Playback the tape.





Removing the compact video cassette

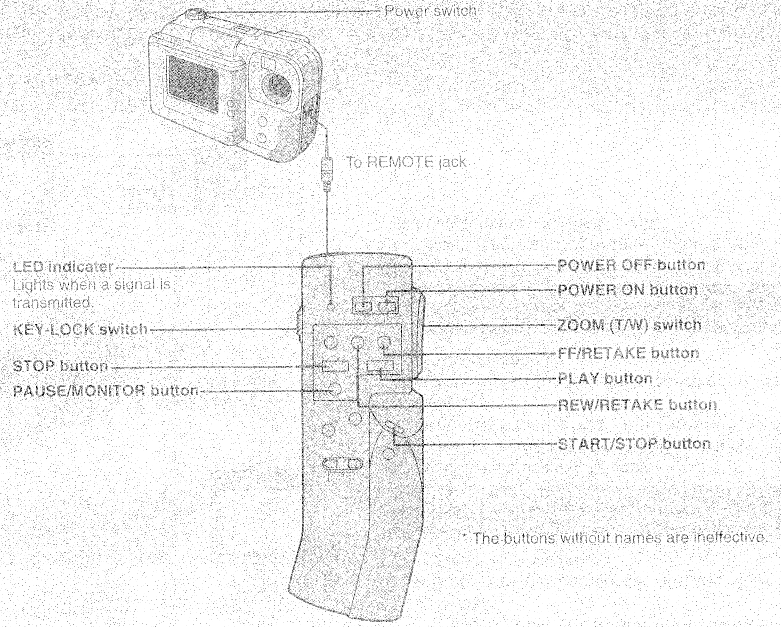
1. Slide the sliding latch.
   — The tape will be unloaded and the compartment door will open.
2. Insert your finger into the hole on the underside of the adapter, push the cassette up from below and remove it.

Notes and Advice

- Only compact video cassette tapes marked VHS-C can be used with the cassette adapter.
- During special-effect playback (slow motion, still frame, etc.), the picture may vibrate or noise bars may appear on the screen.

USING THE OPTIONAL REMOTE CONTROL UNIT

The RM-V20U permits VCR functions to be controlled from a distance. When using the RM-V20U, connect its remote cable to the camcorder's REMOTE jack.
*Before use, refer to the instruction booklet.

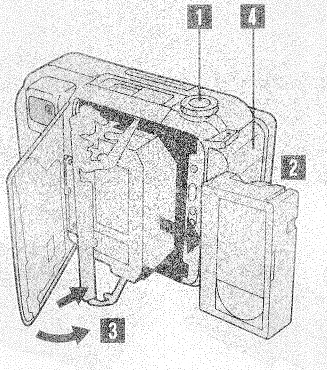

Power switch
To REMOTE jack
LED indicater
Lights when a signal is transmitted.
KEY-LOCK switch
STOP button
PAUSE/MONITOR button
POWER OFF button
POWER ON button
ZOOM (T/W) switch
FF/RETAKE button
PLAY button
REW/RETAKE button
START/STOP button

* The buttons without names are ineffective.

- Functions of the remote control unit's control buttons vary depending on the camcorder's POWER position.

Buttons	**Functions**	
	With the camcorder's power switch set to "VIDEO".	With the camcorder's power switch set to "CAMERA" or "⏲".
POWER ON	Power on	
POWER OFF	Power off	
START/STOP	—	Recording Start/Stop
ZOOM T/W	—	Zoom T/W
FF/RETAKE	FF/FF Shuttle Search	Retake (Forward)
REW/RETAKE	REW/Rew Shuttle Search	Retake (Rewind)/Quick Review
STOP	Stop	Instant ReShoot
PLAY	Playback	—
PAUSE/MONITOR	Pause	—

AFTER USE



1. Set the power switch to "OFF".
2. Remove the video cassette.
3. Close and lock the cassette holder and cassette cover.
4. Slide BATTERY RELEASE to remove the battery pack.

HOW TO CLEAN THE CAMCORDER

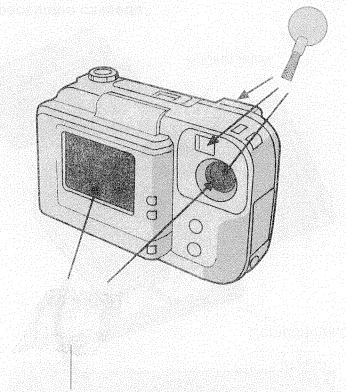
When the camcorder's exterior is dusty, clean by gently wiping with a soft cloth.

HOW TO CLEAN THE LCD MONITOR

Clean using the provided cleaning cloth.

HOW TO CLEAN THE LENS/VIEWFINDER

When the lens/viewfinder is dirty or dusty, blow it with a blower brush and then gently wipe with lens cleaning paper.


Cleaning cloth (provided)

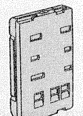
Notes and Advice

- Avoid using strong cleaning agents such as benzine or alcohol as they may damage the exterior.
- Do not apply excessive force to the LCD monitor.
- The lens may become moldy if left dirty.
- Cleaning should be done only after the power supply unit has been disconnected.

SYSTEMS FLEXIBILITY

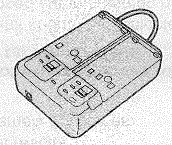
For maximum enjoyment, make the most of the provided or optional accessories depending on the situation.

- **Battery pack**
  BN-V12U
  BN-V22U
  BN-V50U
  BN-V60U



*Recording time ☞ P. 11

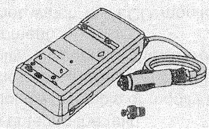
- **Multi AC Charger/Adapter AA-V35EG**
  Charges or discharges battery pack or powers the camcorder via household AC current. (Can be used with 110 V to 240 V.)



*Charging time

	Charging time	Discharging time
BN-V12U	approx. 50 min.	approx. 210 min
BN-V22U	approx. 100 min.	approx. 420 min
BN-V50U	approx. 120 min.	approx. 540 min
BN-V60U	approx. 100 min.	approx. 420 min

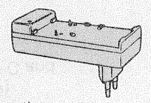
- **Car battery charger BH-V3E☆**
  Charges battery pack or powers the camcorder via a car battery. (Use with 12 V or 24 V nagative grounded cars only.)



*Charging time

BN-V12U	Approx. 50 min.
BN-V22U	Approx. 90 min.
BN-V60U	Approx. 90 min.

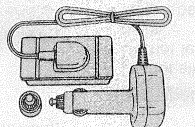
- **Battery charger BH-VC10EG☆**
  Use to charge the battery pack.



*Charging time

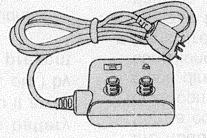
BN-V12U	Approx. 7 hours
BN-V22U	Approx. 13 hours
BN-V60U	Approx. 13 hours

- **Car battery cord AP-V7E**
  Power the camcorder via a car battery. (Use with 12 V negative grounded cars only.)



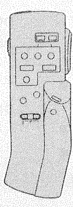
*Cable length: 2 m

- **RF unit RF-V5E**
  Use to connect the camcorder to a regular television for playback.



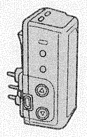
*Cable length: 1.5 m

- **Wired remote control unit RM-V20U†**

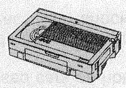


*Cable length: 3 m

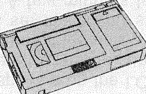
- **TV tuner TU-V20E†**
  Attach it to the camcorder to watch TV programs.



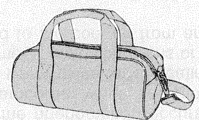
- **Compact VHS (VHS-C) cassettes EC-45/30**
  Allows 45/30 minutes of VHS recording and playback respectively.



- **Cassette adapter C-P6U**
  Enables the VHS-C cassette to be used with regular VHS machines.



- **Active carrying bag CB-V7U**



* Dimensions (WxHxD): 340 x 170 x 155 mm

☆The BN-V50U battery pack is not rechargeable with the BH-V3E and the BH-VC10EG.

†The RM-V20U and the TU-V20E cannot be used at the same time.

Some accessories are not available in some areas.

HELPFUL TERMS AND INFORMATION

The following glossary is for your convenience in helping you better understand your camcorder and its operation.

AUX mode: (☞ P. 26)
Refers to Auxiliary mode. When the camcorder is connected to a VCR for editing or dubbing, the VCR should be set to this mode.

AV: (☞ P. 26)
Short for Audio/Video. Often refers to the audio (sound) and video (picture) signals which, when combined, make up a program.

CCD (Charge Coupled Device):
Solid-state imaging device used in camcorders as the camera's image pickup; analogous to the eye's retina except that picture information is output as electric signals.

Head:
An electronic component which "writes" or "reads" video signals on the tape.

HQ (High Quality):
An enhancement feature in the VCR circuitry which provides greater picture detail.

Instant ReShoot (Rec. Return): (☞ P. 21)
Useful to re-record a segment that you don't like. The tape automatically rewinds back to the beginning of the last recording.

LCD (☞ P. 10, 19, 29)
Short for Liquid Crystal Display.

Lithium battery: (☞ P. 14)
Necessary for camcorder's clock and date/time settings.

Message mode: (☞ P. 24)
Useful for communication, as a "video bulletin board" and to make "video letters", etc.

Quick review: (☞ P. 20)
Permits reviewing of the final part of the last recorded segment in the Record-Pause mode.

QuickRec (5-sec. Rec. mode) (☞ P. 19)
Records a scene for 5 seconds.

Refresh: (☞ P. 12)
A feature on the AC power adapter that lets you completely discharge the power from the battery pack before charging again. Contributes to longer battery life.

Retake: (☞ P. 20)
Permits forward or reverse search in the Record-Pause mode for easy re-recording.

Seek function: (☞ P. 21)
Searches for a blank segment on the tape.

Self-timer: (☞ P. 20)
Enables a camcorder to automatically start recording after a selected delay time so the operator can enter the picture before actual recording begins.

Tracking: (☞ P. 22)
A mechanism enabling the tracking position to be adjusted during playback so that the heads can accurately pick up the recorded signal in the best condition.

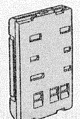
Tally lamp: (☞ P. 18)
Lights to show that recording is in progress.

VCR: (☞ P. 26)
Short for Video Cassette Recorder.

SYSTEMS FLEXIBILITY

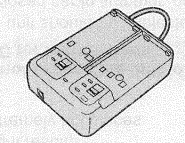
For maximum enjoyment, make the most of the provided or optional accessories depending on the situation.

- **Battery pack**
  BN-V12U
  BN-V22U
  BN-V50U
  BN-V60U



*Recording time ☞ P. 11

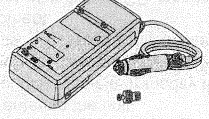
- **Multi AC Charger/Adapter AA-V35EG**
  Charges or discharges battery pack or powers the camcorder via household AC current. (Can be used with 110 V to 240 V.)



*Charging time

	Charging time	Discharging time
BN-V12U	approx. 50 min.	approx. 210 min
BN-V22U	approx. 100 min.	approx. 420 min
BN-V50U	approx. 120 min.	approx. 540 min
BN-V60U	approx. 100 min.	approx. 420 min

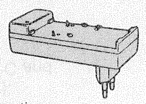
- **Car battery charger BH-V3E**☆
  Charges battery pack or powers the camcorder via a car battery. (Use with 12 V or 24 V nagative grounded cars only.)



*Charging time

BN-V12U	Approx. 50 min.
BN-V22U	Approx. 90 min.
BN-V60U	Approx. 90 min.

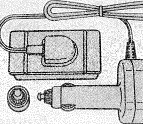
- **Battery charger BH-VC10EG**☆
  Use to charge the battery pack.



*Charging time

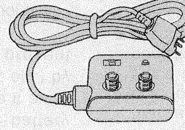
BN-V12U	Approx. 7 hours
BN-V22U	Approx. 13 hours
BN-V60U	Approx. 13 hours

- **Car battery cord AP-V7E**
  Power the camcorder via a car battery. (Use with 12 V negative grounded cars only.)



*Cable length: 2 m

- **RF unit RF-V5E**
  Use to connect the camcorder to a regular television for playback.



*Cable length: 1.5 m

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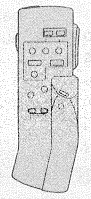

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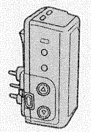

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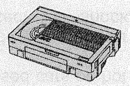
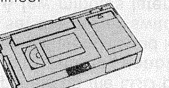


- **Cassette adapter C-P6U**
  Enables the VHS-C cassette to be used with regular VHS machines.



- **Active carrying bag CB-V7U**

* Dimensions (WxHxD):
340 x 170 x 155 mm

☆The BN-V50U battery pack is not rechargeable with the BH-V3E and the BH-VC10EG.

†The RM-V20U and the TU-V20E cannot be used at the same time.

Some accessories are not available in some areas.

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The following glossary is for your convenience in helping you better understand your camcorder and its operation.

AUX mode: (☞ P. 26)
Refers to Auxiliary mode. When the camcorder is connected to a VCR for editing or dubbing, the VCR should be set to this mode.

AV: (☞ P. 26)
Short for Audio/Video. Often refers to the audio (sound) and video (picture) signals which, when combined, make up a program.

CCD (Charge Coupled Device):
Solid-state imaging device used in camcorders as the camera's image pickup; analogous to the eye's retina except that picture information is output as electric signals.

Head:
An electronic component which "writes" or "reads" video signals on the tape.

HQ (High Quality):
An enhancement feature in the VCR circuitry which provides greater picture detail.

Instant ReShoot (Rec. Return): (☞ P. 21)
Useful to re-record a segment that you don't like. The tape automatically rewinds back to the beginning of the last recording.

LCD (☞ P. 10, 19, 29)
Short for Liquid Crystal Display.

Lithium battery: (☞ P. 14)
Necessary for camcorder's clock and date/time settings.

Message mode: (☞ P. 24)
Useful for communication, as a "video bulletin board" and to make "video letters", etc.

Quick review: (☞ P. 20)
Permits reviewing of the final part of the last recorded segment in the Record-Pause mode.

QuickRec (5-sec. Rec. mode) (☞ P. 19)
Records a scene for 5 seconds.

Refresh: (☞ P. 12)
A feature on the AC power adapter that lets you completely discharge the power from the battery pack before charging again. Contributes to longer battery life.

Retake: (☞ P. 20)
Permits forward or reverse search in the Record-Pause mode for easy re-recording.

Seek function: (☞ P. 21)
Searches for a blank segment on the tape.

Self-timer: (☞ P. 20)
Enables a camcorder to automatically start recording after a selected delay time so the operator can enter the picture before actual recording begins.

Tracking: (☞ P. 22)
A mechanism enabling the tracking position to be adjusted during playback so that the heads can accurately pick up the recorded signal in the best condition.

Tally lamp: (☞ P. 18)
Lights to show that recording is in progress.

VCR: (☞ P. 26)
Short for Video Cassette Recorder.

CAUTIONS

For safety, strictly observe the following instructions.

- Do not open the camcorder's chassis.
- Prevent inflammables, water and metallic objects from entering the unit.
- Do not disassemble or modify the unit.
- Do not use the unit when there is lightning in the vicinity. Disconnect the power cable of connected equipment.
- Do not watch the LCD monitor or operate the unit while driving/walking. That may undermine your attentiveness to driving/walking, and lead to a traffic accident.
- Do not short-circuit the terminals of the battery packs. When carrying a battery pack, keep it away from metallic objects (key holder, necklace, etc.) by putting it in a vinyl bag, etc. This can prevent accidents.

Avoid using the unit under the following conditions:

- Places subject to excessive humidity or dust.
- Near appliances generating strong magnetic or electric fields (speakers, broadcasting antennas, etc.).
- Places subject to soot or steam such as near a cooking stove.
- Places subject to excessive shock or vibration.
- Near a television set (rolling pictures or howling might result).
- Extremely hot places.

Do not expose the unit to high temperatures over 40°C for long periods.

If the unit should be subjected to direct sunlight, or left in a closed car in summer, or placed near a heater, the CCD may deteriorate and the cabinet may become deformed. Furthermore, this also may cause the transistors and other electronic and mechanical parts to malfunction. Remember the following:

- Do not leave the unit in places of over 50°C.
- Do not use the unit in places of over 40°C.
- Do not use the unit in places of below 0°C.
- Protect the unit from excessively dry or humid conditions (below 35% or above 80% humidity).
- For long storage, select a place between –20°C and 30°C.

Handle the unit carefully.

- Protect the microphone from excessive shocks.
- Do not carry the unit by holding it only by the LCD monitor.
- Avoid undue strain on the camcorder's shoulder strap, such as unnecessarily swinging the camcorder.

Moisture condensation.

- You have observed that pouring a cold liquid into a glass will cause drops of water to form on the glass's outer surface. This same phenomenon occurs on the head drum of a camcorder when it is moved from a cool place to a warm place, after heating a cold room, under extremely humid conditions or in a place directly subjected to the cool air from an air conditioner.
- Moisture on the head drum can cause severe damage to the video tape, and can lead to internal damage to the camcorder itself.
- If moisture condensation occurs on the head drum, a condensation warning appears on the LCD panel and the unit enters the Stop mode, unable to function. In such a case, turn off the unit, and leave it for a few hours. Then set the power switch to "CAMERA" or "VIDEO". A few minutes later, the warning should disappear.

Take special care for protection of the unit.

- Do not allow the unit to become wet.
- Do not leave the unit in closed cars on hot summer days.
- Take special care not to drop the unit or strike it against hard objects. Protect from shocks during transportation.

Make it a rule to observe the following instructions.

- Do not remove the battery pack or disconnect other power supply units while the power is on. If not observed, this will cause tape damage and missoperation.
- When the unit is not in use, remove the battery pack.

Be careful not to damage the CCD.

- Do not keep the lens directed at extremely bright objects such as the sun or other light sources for long periods. Although the CCD is less susceptible to such burn than a tube would be, caution should be exercised when using this unit.
- Do not direct the viewfinder at the sun.

Be careful not to damage the LCD monitor.

- To prevent scratching or cracking its surface, don't push it strongly or apply any shocks, and avoid rubbing it with coarse cloth.
- Do not place the unit with the LCD monitor on the bottom.
- During transportation, close the flaps of the attached sun hood.
- While using the camcorder, the back of the LCD monitor may heat up. This is not due to any defect of the unit.

Serious malfunctioning

If malfunctioning occurs, stop using the unit immediately and consult your local JVC dealer.

General Battery Precautions

- When the RM-V20U/C-P6U is not functioning even when correctly operated, the batteries are exhausted. Replace them with fresh batteries.
- Use only following batteries in the unit.
  RM-V20U............................R03 (AAA) size
  C-P6U.................................R6 (AA) size

Please make note of the following rules for battery use. When misused, batteries can leak or explode.

1. Insert the batteries correctly according to the diagram inside the battery section.
2. Do not use old and new batteries together.
3. Do not use two different kinds of batteries. Although sizes may be the same, voltages may differ.
4. Do not expose batteries to excessive heat as they can leak, or explode. Do not dispose of batteries in a fire.
5. Remove batteries from the unit if it is to be stored for an extended period to avoid battery leakage which can cause malfunctions.

IN CASE OF DIFFICULTY

What may initially appear to be trouble is not always a real problem. Make sure first.....

Symptoms	Check points
Power	
No power is supplied.	■ Is the battery pack charged? ☞ P. 12. ■ Is the power supply unit (i.e.,battery pack) correctly connected? ☞ P. 11.
Recording	
Recording is impossible.	■ Check to see if the cassette's safety tab is in place. ☞ P. 15. ■ Does the condensation warning appear on the LCD panel? ☞ P. 10.
Playback	
Tape is running, but no playback picture appears.	■ Is the IN/OUT SELECT set to OUT? ☞ P. 26. ■ Is the AV cable connected correctly? ☞ P. 26. ■ If A/V connection is used, is the TV's VIDEO/TV switch set to VIDEO? ■ Is the TV receiver set to your video channel? ■ Is the RF unit set to the correct channel? ■ Is the LCD monitor turned off? Press DISPLAY ON/OFF to turn it on.
Noise bars appear in the playback picture.	■ Use TRACKING to reduce noise bars. ☞ P. 22.
Playback picture is blurred or interrupted.	■ Video head may be dirty or worn out. For head cleaning or replacement, consult the nearest JVC Service Dealer.
Rewinding or fast-forwarding is impossible.	■ Check to see if the tape has already been fully wound on one reel or the other.
Other	
White vertical lines appear when shooting a very bright object.	■ The background contrasts very much with the object. This is normal.
The subject viewed on the monitor is dark.	■ Are you shooting a strongly backlit object? Shoot with the light behind you.
Picture does not appear.	■ Is the BRIGHT control adjusted correctly? ☞ P. 19. ■ Is the LCD monitor turned off? Press DISPLAY ON/OFF to turn it on.
Dark picture on the monitor.	■ Is the BRIGHT control adjusted correctly? ☞ P. 19. ■ In cold temperatures, the picture may be dark even if the power is turned on. This is normal.
The colors are incorrect or weak.	■ Is the COLOUR control adjusted correctly? ☞ P. 19.
Colored bright spots appear all over the LCD monitor.	■ This is characteristic of LCD (Liquid Crystal Display), and not due to any defect of the unit.
The indicators and the picture color on the LCD monitor are not clear.	■ This may occur when the surface or the edge of the LCD monitor is pressed.
The picture on the LCD monitor becomes discolored.	■ Adjust the angle of the LCD monitor to obtain proper picture color.
No sound.	■ Is the VOL.(volume) control set to the "minimum" position? ☞ P. 23.
Picture is blurred in the Quick Review or Retake mode.	■ Is SP/LP properly set? ☞ P. 16.
The EJECT switch doesn't function.	■ Is the power switch set to "MESSAGE"? ☞ P. 24.
The LCD monitor and the viewfinder and lens have become dirty (for example, by fingerprints).	■ Gently wipe them with the provided cleaning cloth or other soft fabric. ☞ P. 29.

The camcorder is a microcomputer-controlled device. External noise and interference (from a TV, a radio, etc.) might prevent it from functioning properly. In such cases, first disconnect its power supply unit (battery pack, AC Power Adapter/Charger) and clock battery; and then reconnect it and proceed as usual from the beginning.

Special note on head cleaning
Accumulation of dirt and other particles on the video heads may cause the playback picture to become blurred or interrupted. If such troubles are encountered, please consult your nearest JVC dealer.

SPECIFICATIONS

GENERAL

Format : VHS PAL standard
Power source : DC 6 V ⎓
Power consumption : 5.3 W (LCD monitor off)
8 W (LCD monitor on)
Signal system : PAL-type
Video recording system : Luminance: FM recording
Color: Converted sub-carrier direct recording
Conforms to VHS standard
Cassette : VHS C cassette
Tape speed (SP) : 23.39 mm/sec
(LP) : 11.70 mm/sec
Recording time
Max. (SP) : 45 minutes (with EC-45 cassette)
(LP) : 90 minutes (with EC-45 cassette)
Operating temperature : 0°C to +40°C
Operating humidity : 35% to 80%
Storage temperature : –20°C to +50°C
Weight : Approx. 830 g
Dimensions : 172 (W) x 120 (H) x 82 (D)mm

CAMERA

Pick up : 1/4"-format CCD
Minimum required illumination : 12 lx (F2.8)
Illumination range : 12 to 100,000 lx
Lens : F2.8, f = 4 to 12 mm, 3:1 power zoom lens
Focus : Pan-focus (W:40 cm to infinity, T:1.3 m to infinity)
Viewfinder : Optical zoom viewfinder

LCD MONITOR

Size : 3" diagonally measured
System : LCD/TFT active matrix

VIDEO (via VIDEO connector)

Output : 1 Vp-p, 75 ohms, unbalanced
Input : 0.5 to 2.0 Vp-p, 75 ohms, unbalanced

AUDIO

Output : –8 dBs, Low impedance (via AUDIO connector)
Input : –8 dBs high impedance (via AUDIO connector)
Speaker : 20 mm round x 1, monaural
Headphone : 3.5 ø, monaural

AC POWER ADAPTER/BATTERY CHARGER (AA-V11EG) SPECIFICATIONS

Power requirement : AC 110 – 240 V∿, 50/60 Hz
Power consumption : 23 W
Output : DC 8.5 V ⎓, 1.3 A (CHARGE), DC 6.3 V ⎓, 1.8 A (VTR)
Charging system : Constant current, peak detection, timer controlled
Dimensions : 150(W) x 42(H) x 68(D) mm
Weight : Approx. 350 g

CASSETTE ADAPTER (C-P6U) SPECIFICATIONS

Dimensions : 188 (W) x 25 (H) x 104 (D) mm
Weight : Approx. 240 g
Accessory : "R6 (AA)"-size battery x 1

For provided accessories, ☞ P. 5
For optional accessories, ☞ P. 30

Specifications shown are for SP mode unless otherwise specified.
E.&O.E.Design and specifications subject to change without notice.